Can Software-Defined Networking (SDN) Enhance Operator Monetization?

Software-Defined Networking (SDN) is generating a lot of excitement, primarily as a way to simplify networking. It comes to the industry at a time when growing demand, greater service diversity, and increasing infrastructure complexity have challenged the ability of network operators to turn up and take down services quickly. By abstracting control from forwarding, SDN gives network operators more flexible and ostensibly more responsive central control of network traffic through a programmable network.

Complementary to SDN is the network functions virtualization (NFV) work underway. The NFV focus is on decoupling network functions from underlying hardware, allowing for more flexible and optimized deployment options and for more dynamic control. This concept of managing network services with faster response to demands has led to a lot of excitement over network optimization, service agility, and operational and capital savings.

These technologies bring new efficiencies that optimize the operations of networks for significant savings. But what about increasing revenues? Do programmable networks help make, as well as save, money for operators? We asked service providers directly. A study of potential benefits of SDN among network operators in 2013 by Heavy Reading found that faster service rollout and monetization were a close second essential benefit after operational and capital cost reduction (Table 1).

Table 1. Rating SDN's Potential Benefits

	Essential	Important, But Not Essential	Useful, But Not Important	Not Important at All
Improved resource utilization	35.8%	42%	16%	3.7%
Enabling of service and network innovation	30.5%	46.3%	15.9%	2.4%
Enabling the deployment of lower-cost hardware	36.6%	39%	14.6%	4.9%
Reduced operational cost, especially in maintaining distributed equipment	41.5%	34.1%	18.3%	3.7%
Automation/service orchestration with increased service velocity	36.6%	39%	19.5%	3.7%
Coordination of carrier network resource assignments with IP/MPLS and DC networks	37%	38.3%	17.3%	4.9%
New services and services monetization	**39.5%**	**35.8%**	**17.3%**	**2.5%**
Note: Arranged in descending order based on percentages of "Essential" plus "Important"				

Source: Heavy Reading Study of Network Operators, 2013

The Open Networking Foundation (ONF) has touted some monetization opportunities based on the use of the SDN approach. These opportunities are based on the ability of operators to create new services "by allowing and automating direct association between individual or logical groupings of clients and applications and the network resources necessary to deliver differentiated and measurable quality of service (QoS)." Additionally, the ONF promotes the improvement of existing services through SDN as a contributor to enhanced monetization. Improvements based on specific use cases include faster service creation, broader coverage through easier scalability, and mass customization.

Enabling a Shift to New Business Models

Rather than attempt to seek "killer" SDN-enabled applications and services that operators can monetize and use to achieve differentiation and competitive advantage, they may instead want to look at revenue generating opportunities from a different perspective. Following are some fresh ways of doing so.

- **Faster, open innovation** of new applications with programmable networks should be as broad-based as possible, including operators themselves, third-party companies, and even individual developers. Mass innovation leads to mass opportunity so operators should embrace broad openness for development and consider creating open marketplaces for the promotion and sale of applications. Apple's App Store is a good example. Amazon's electronic publishing division is another. An agile, open environment for service creation that encourages the broadest base to collaborate, develop, and market applications is an important monetization approach for operators.

- **Speedier certification of new applications and services** is as much a function of technology as it is an operational strategy. Operators can utilize capabilities through SDN and NFV to support the fast on-ramping of new applications and services; to move at the speed of web innovation to take advantage of opportunities. This relates to internal process change and is another monetization opportunity based on faster decision making that is complementary to the next approach regarding models.

- **Business model innovation and fast introduction of new revenue models** can dramatically change how an operator looks at service monetization. Today's service revenue model is very subscriber oriented. It focuses on customers paying directly for services delivered by operators. But evolving new business and revenue models include third parties such as advertisers or content providers paying for services in exchange for customer views of advertising and content. The right programmable network environment has the intelligence and agility to support varied and multiple business and revenue models. It provides the ability to collect, analyze, and monetize data to support these new models. The technology is ready and now it is up to the operator's determination and willingness to embrace new ways of doing things. We're going through a revolution in service demand and creation - not merely an evolution - that will realize non-traditional sources of monetization.

- **Put analytics to use across the network** to inform the creation of more lucrative, better services and to support new business models. Customer, network, and application data that were previously not used due to lack of capabilities to process such large volumes of data can be turned into information that points to new monetization opportunities. A suitable SDN infrastructure, therefore, will not just have network programmability but will have the implied continual feedback loop. This includes data collection and analytics extracting information which is used with business policies to program the network to generate data and so on.

- **Application and content user-friendliness** should be an attribute supported by the SDN technology employed and a continual byproduct of process innovation. With the continual interaction between the network and applications in a SDN-enabled environment, operators can better understand and immediately address what customers value most. Focusing on customer value and demonstrating that a resilient network environment can also respond to customer expectations can lead to new, personalized offers. It's one thing to keep track of voice minutes or the amount of bandwidth consumed by customers. It's quite another to look at customer usage patterns and profile data, and suggest services and applications that customers might enjoy. This shift towards user-friendliness based on tighter interaction between applications, data, and customers is another, subtle tool to enhance monetization.

SDN, NFV, open APIs, open source code, and other technologies play an important role in making operator networks more responsive to application needs and service demands. Now operators can develop new monetization opportunities due to new ways of looking at business strategy, organizational priorities, analytics, and more open environments that encourage broad interaction among customers and developers.

And what does this mean for an SDN infrastructure? It will need to support a wide range of new business and revenue models with relevant information collected and analyzed to enhance the service offerings. In regard to the monetization aspect, the infrastructure chosen by operators will need to be very flexible in supporting all types of personalized and on-demand services, probably including some that are not yet conceived. It will need to support a fast software innovation environment, enabling rapid service ramp-up and ramp-down. It will need to interact with applications deployed to assure the shift to value creation and increased revenue opportunities.

For More Information

- Cisco® Open Network Environment for Service Providers
- Operator Network Monetization Through Openflow-Enabled SDN, Open Networking Foundation
- Open Daylight Community

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